Innovations in
Freight Data Workshop

SEPTEMBER 19–21, 2023
Washington, D.C.

Convened by
Transportation Research Board

Supported by
**Iowa Department of Transportation
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WELCOME FROM ALISON CONWAY
COMMITTEE CHAIR

Welcome to TRB's 2023 Innovations in Freight Data Workshop! Building on the success of its predecessor workshops in 2017, 2019, and 2021, the Innovations in Freight Data Workshop aims to bring together the community of freight data users and developers to share, discuss, and learn about recent advances in applications of freight data and uses of freight data for decision-making. Panelists and presenters will address topics that include, but are not limited to:

Alison Conway

- Emerging data needs for public and private sector decision-making;

- Recent advances in the application of emerging data sources for broad multi-modal freight applications;

- Experience and lessons learned from integrating new data sources in practice;

- Advances in data visualization, data collection technologies, artificial intelligence and machine learning, and data analytics methods with potential applications for freight; and

- Promising advances and future needs for continuing advancement in freight data research and practice.

Sessions will be presented in a variety of formats to enable attendees to directly interact with presenters and to participate in broad discussions on important advances and the future of freight data.

Thank you for your participation!

Alison Conway, City College of New York
Chair, 2023 Freight Data Workshop Planning Committee

PLANNING COMMITTEE

This conference would not have been possible without the combined efforts of many individuals and organizations.

Alison Conway, Chair, City College of New York
Sarah Hernandez, University of Arkansas
Samuel Hiscocks, Iowa Department of Transportation
Nikola Ivanov, University of Maryland CATT Lab
Donald Ludlow, CPCS
Jeffrey Purdy, Federal Highway Administration
Keri Robinson, Caltrans
Casey Wells, Texas Department of Transportation
Akiko Yamagami, LA County Metropolitan Transportation Authority

TRB STAFF
Katherine Kortum, Senior Program Officer
James Manning, Operations Coordinator
Gary Jenkins, Program Operations Manager

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SCHEDULE AT-A-GLANCE

Tuesday, September 19		
Time	Location	Session Title
12:30 PM	Keck 100 Lobby	Registration Opens
1:00 PM–4:00 PM	Keck 100	Committee Meeting: Standing Committee on Freight Transportation Data (AED70)
4:00 PM	-Adjourn-	

Wednesday, September 20		
Time	Location	Session Title
7:00 AM	Keck 100 Lobby	Registration Opens
7:30 AM–8:30 AM	Breakfast	
8:30 AM–9:15 AM	Keck 100	Opening Session - Welcome and Keynote
9:15 AM–10:00 AM	Keck 100	Roundtable Discussion: How the Commodity Flow Survey Made Its First 100 Million
10:00 AM–10:30 AM	Break	
10:30 AM–12:00 PM	Keck 100	Panel 1: Freight Decision-Making: Telling Compelling Stories with Freight Data
12:00 PM–1:00 PM	Lunch	
1:00 PM–2:30 PM	Keck 100	Session 1A: Innovative Uses of Public Data
1:00 PM–2:30 PM	Keck 101	Session 1B: Data for Modeling
1:00 PM–2:30 PM	Keck 103	Session 1C: Data for Supply Chain Analysis and Decision-Making
2:30 PM–3:00 PM	Break	
3:00 PM–4:15 PM	Keck 101	Breakout Speed Round 1: Truck Telematics and Probe Data Applications
3:00 PM–4:15 PM	Keck 103	Breakout Speed Round 2: Freight Data for Policy Analysis
4:30 PM–6:00 PM	Keck Atrium	Interactive Poster Session and Reception
6:00 PM	-Adjourn-	

SCHEDULE AT-A-GLANCE

Thursday, September 21		
Time	Location	Session Title
7:00 AM	Keck 100 Lobby	Registration Opens
7:30 AM–8:30 AM	Breakfast	
8:30 AM–10:00 AM	Keck 100	Panel 2: Electronic Logging Device Data: Opportunities and Challenges
10:00 AM–10:30 AM	Break	
10:30 AM–12:00 PM	Keck 100	Session 2A: Emerging Data Analytics Approaches for Decision-Making
10:30 AM–12:00 PM	Keck 101	Session 2B: Planning for Future Freight Infrastructure
10:30 AM–12:00 PM	Keck 103	Session 2C: Using Data for Emissions Estimation
12:00 PM–1:00 PM	Lunch	
1:00 PM–2:30 PM	Keck 100	Panel 3: Freight Data for E-Commerce Planning and Regulation
2:30 PM–3:00 PM	Break	
3:00 PM–4:00 PM	Keck 100	Closing Session
4:00 PM	-Adjourn-	

WORKSHOP PROGRAM

To view the conference program online, scan the QR code or go to: qrco.de/beIZma

TUESDAY, SEPTEMBER 19, 2023

12:30 PM
Registration Opens
Keck 100 Lobby

1:00 PM–4:00 PM
Committee Meeting: Standing Committee on Freight Transportation Data (AED70)

Chair: Alison Conway, City College of New York

Keck 100

WEDNESDAY, SEPTEMBER 20, 2023

7:30 AM
Registration Opens
Keck 100 Lobby

7:30 AM–8:30 AM
Breakfast

8:30 AM–9:15 AM
Opening Session - Welcome and Keynote
Keck 100

Moderator: Alison Conway, City College of New York

Session Presentation
Recent Advances and Emerging Data Needs at the Bureau of Transportation Statistics
• Patricia Hu, Bureau of Transportation Statistics

9:15 AM–10:00 AM

Panel Discussion: How the Commodity Flow Survey Made Its First 100 Million

Keck 100

Moderator: Berin Linfors, U.S. Census Bureau

For many years, data users of the Commodity Flow Survey – a joint effort between the Bureau of Transportation Statistics and the Census Bureau – have requested that the survey publish more detailed data along its key dimensions of geography, product, and mode of transportation. To work to address these needs and publish as detailed data as possible about the domestic movement of goods, the CFS team has been working to modernize various aspects of the survey lifecycle. As a result of these efforts, the survey's most recent cycle, for reference year 2022, collected approximately 15x the data it collected in its previous cycle. To both facilitate data collection and ensure that this volume of data could be processed, we have incorporated machine learning techniques and modernized data editing, imputation, and review. Significantly more data will enable us to provide more granular estimates along several dimensions, especially product and geography, and better address the longstanding stakeholder demands for more detailed data. This panel will share more on these efforts and current progress and discuss the ultimate benefits of these data for data users.

Session Presentation
- **Berin Linfors,** U.S. Census Bureau
- **Christian Moscardi,** U.S. Census Bureau

10:00 AM–10:30 AM

Break

10:30 AM–12:00 PM

Panel 1: Freight Decision-Making: Telling Compelling Stories with Freight Data

Keck 100

Moderator: Akiko Yamagami, LA Metro

In this panel, agency experts from federal, state, and local agencies will share their experience using freight data to inform freight planning and infrastructure investment.

Panelists
- **Caitlin Hughes,** Federal Highway Administration
- **David Gray,** South Carolina Department of Transportation
- **Brian Hamlin,** Seattle Department of Transportation

12:00 PM–1:00 PM
Lunch

1:00 PM–2:30 PM
CONCURRENT SESSIONS

Session 1A: Innovative Uses of Public Data
Keck 100

Moderator: Jeff Purdy, Federal Highway Administration

Session Presentations
Simulating Multi-State Corridor Performance from Origin to Destination
- **Alex Marach,** CPCS
- **Kamol Roy,** CPCS

Trends in Truck Travel from the NextGen NHTS Truck OD Data
- **Mitchell Fisher,** MacroSys Research and Technology

Predicting Waterborne Commerce Statistics with Automatic Identification System Data and Machine Learning
- **Sanjeev Bhurtyal,** University of Arkansas

Unlocking Granular Insights: Disaggregation of the Freight Analysis Framework Commodity Flow Database for Regional and Multi-Jurisdictional Use
- **Daniel Forbush,** Cambridge Systematics

The Eastern Transportation Coalition FAF Disaggregation Project: Southwest Pennsylvania Commission Local/Regional Application
- **Sara Walfoort,** Southwestern Pennsylvania Regional Commission

Session 1B: Data for Modeling
Keck 101

Moderator: Diana Ramirez-Rios, University at Buffalo

Session Presentations
Depot Detection for Freight Tour Data Development
- **Monique Stinson,** Bureau of Transportation Statistics

A Heuristic Method to Sequentially Impute Vehicle Class and Weight for U.S. Highway Network Truck Flows
- **Diyi Liu,** Georgia Institute of Technology

Developing a Freight Asset Choice Model for Agent-based Simulation Models
- **Natalia Zuniga-Garcia,** Argonne National Laboratory

Future Freight Population Generation for Agent-Based Modeling
- **Abdelrahman Ismael,** Argonne National Laboratory

Session 1C: Data for Supply Chain Analysis and Decision-Making

Keck 103

Moderator: Tyler Graham, Texas Department of Transportation

Session Presentations

QFIT - A New Source for Commodity Flow Data
• **Benjamin Zietlow,** Quetica

Data Merging and Data Analysis to Estimate Supply Chain Fluidity
• **Mario Monsreal,** Texas A&M Transportation Institute

Investigating the Factors Affecting Multi-Ship Mode Choices Using Data Fusion Technique
• **Md Sami Hasnine,** Howard University

GIS Analysis Methodology of Dangerous Goods Moving through Metro Vancouver, British Columbia
• **Monica Blaney,** Transport Canada

2:30 PM–3:00 PM
Break

3:00 PM–4:15 PM
CONCURRENT BREAKOUT SPEED ROUNDS

Breakout Speed Round 1: Truck Telematics and Probe Data Applications

Keck 101

Moderator: Nikola Ivanov, Center for Advanced Transportation Technology (CATT) Laboratory, University of Maryland

During this Speed Round session, presenters will provide a high-level overview of their projects in a 6-minute introductory presentation.

Session Presentations

The Use of Telematics Truck Data to Enrich Commodity Flows
• **Shweta Shah,** Geotab

Electric Highways: Accelerating and Optimizing Fast-Charging Deployment for Carbon-Free Transportation
• **Lynn Daniels,** Rocky Mountain Institute

Insights for the Present Time: Enhancing VIUS with Telematics Data
• **Aleksandra Maguire,** S&P Global

Understanding Origin Destination Travel Patterns Using High Fidelity Probe Data
• **Gregory Jordan,** Center for Advanced Transportation Technology (CATT) Laboratory, University of Maryland

Use of Probe Data for Freight Planning and Operations
• **Shuake Wuzhati,** CPCS

Case Study Evaluations of Traditional and Emerging Travel Pattern Data Sources
• **Makarand Gawade,** HDR

Leveraging Probe Data for Freight Modeling
• **Md Rauful Islam,** Virginia Tech

Significance of Non-Freight Trucks in Freight Planning and Modeling
• **Kaveh Shabani,** Cambridge Systematics

Breakout Speed Round 2: Freight Data for Policy Analysis
Keck 103

Moderator: Alison Conway, City College of New York

During this Speed Round session, presenters will provide a high-level overview of their projects in a 6-minute introductory presentation.

Session Presentations

The Myth of a Warehouse: What Does It Mean When A New One is Built in Your Neighborhood?
• **Fatemeh Ranaiefar,** Fehr and Peers

Estimation of Vehicle Payload from GVW WIM Data
• **Syed Haide**r, University of Michigan

Can Dedicated Truck Lanes Improve Freight Mobility? A Case Study with Operational and Safety Analysis
• **Sushant Sharma,** Texas A&M Transportation Institute

Freight Operations Exchange
• **Craig Toth,** HNTB

Impact of Canadian Trucking Protests: A Supply Chain Disruption Model
• **Derek Cutler,** EBP
• **Temple Anyasi,** EBP

Transportation Infrastructure Asset Damage Cost Recovery Correlated with Shale Oil Recovery Operations in Louisiana
• **Ferdous Intaj,** Louisiana State University

Freight Data Interoperability Framework Update
• **Dan Seedah,** Jacobs

4:15 PM–4:30 PM
Break

4:30 PM–6:00 PM

Interactive Poster Session and Reception

Keck Atrium

The Interactive Poster Session is comprised of presentations from the Speed Rounds. Please see presentation titles listed on pages 8 and 9.

THURSDAY, SEPTEMBER 21, 2023

7:00 AM

Registration Opens

Keck 100 Lobby

7:30 AM–8:30 AM

Breakfast

8:30 AM–10:00 AM

Panel 2: Electronic Logging Device Data: Opportunities and Challenges

Keck 100

Moderator: Sal Hernandez, Oregon State University

Electronic logging devices (ELDs) provide a new opportunity for capturing data that can inform better planning for truck operations, but also present new challenges for operators and operator privacy. On this panel, experts will discuss potential applications of ELD data and experience navigating the use of this emerging data source.

Session Presentation

The Degree to Which Truck Parking Facilities Serve Drivers: A New Performance Measure for Transportation Agencies

- **Gareth Robins,** Robinsight
- **Rodolfo Souza,** Texas A&M Transportation Institute
- **Sal Hernandez,** Oregon State University

10:00 AM–10:30 AM

Break

10:30 AM–12:00 PM

CONCURRENT SESSIONS

Session 2A: Emerging Data Analytics Approaches for Decision-Making

Keck 100

Moderator: Makarand Gawade, HDR

Session Presentations

The Rise of Planimetric Digital Twins: Implications for Freight Model Calibration and Trip Generation Rate Stabilization in Warehousing
- **Troy Simpson,** Ecopia

A Machine Learning Method for Strategy Data Development with an Empirical Freight Asset Model Application
- **Monique Stinson,** Bureau of Transportation Statistics

Responsibly Telling the Freight Story Using Generative Artificial Intelligence
- **Dan Seedah,** Jacobs

Heavy Duty Truck Operational Insights Using ALPR Systems
- **Koti Reddy Allu,** University of California, Irvine

Session 2B: Planning for Future Freight Infrastructure

Keck 101

Moderator: Sam Hiscocks, Iowa Department of Transportation

Session Presentations

North Central Texas Council of Governments Freight Optimization System Deployment
- **Douglas Gettman,** Kimley Horn

Charging Infrastructure Needs of Advanced Clean Truck Rule States
- **Lynn Daniels,** Rocky Mountain Institute

Develop an Analysis, Modeling, and Simulation (AMS) Framework for Connected and Automated Trucks (CAT)
- **Zhitong Huang,** Leidos, Inc.

Planning of Truck Electrification Infrastructure using Emerging Telematics Data
- **Sebastian Guerrero,** WSP

Session 2C: Using Data for Emissions Estimation

Keck 103

Moderator: Stacey Bricka, MacroSys Research and Technology

Session Presentations

U.S. Modal Freight Flows Emissions Estimations and Forecasts
- **Aleksandra Maguire,** S&P Global

Diesel Truck Emissions from Freight Trip Generation Impacts on Air Quality
- **Diana Ramirez-Rios,** University at Buffalo

Addressing Data Gaps in Transportation Emissions Analysis: A Simulation Framework for Metropolitan Planning Organizations and Logistics Companies
- **Olcay Sahin,** Argonne National Laboratory

Changing Gears to Zero-Emissions Trucks
- **Peter Frode,** McKinsey & Company
- **Rebecca Gould,** McKinsey & Company

12:00 PM–1:00 PM
Lunch

1:00 PM–2:30 PM
Panel 3: Freight Data for E-Commerce Planning and Regulation
Keck 100

Moderator: Keri Robinson, California Department of Transportation

In this panel, experts will discuss local and regional agency data needs and best practices for establishing and implementing policies related to e-commerce facilities and e-commerce last-mile activity.

Session Presentations
Freight Data for E-Commerce Planning and Regulation
- **Veiko Parming,** CPCS
- **Nicole Silva,** South Coast Air Quality Management District
- **Alison Conway,** City College of New York

2:30 PM–3:00 PM
Break

3:00 PM–4:00 PM
Closing Session
Keck 100

Moderator: Donald Ludlow, CPCS

During this session, members of the planning committee will provide a summary of key takeaways and research needs identified during the workshop, and audience members will be invited to provide their own insights on important topics discussed during the workshop.

Session Presentation
Closing Session - Key Takeaways
- **Donald Ludlow,** CPCS

REGISTRANT RECORD - PDH FORM

For statement of professional development hours credit, please scan the QR code, or go to: qrco.de/belaB9.

NOTES

Thank you for attending!